UNITED STATES PATENT AND TRADEMARK OFFICE

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10/600,893	06/19/2003	Mahadev Somasundaram	CISCP340/258344	6796

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EXAMINER
WONG, BLANCHE

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/600,893	SOMASUNDARAM, MAHADEV
Office Action Summary	Examiner	Art Unit	
	Blanche Wong	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2009*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-16 and 18-26* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-8,10-16 and 18-26* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date *May29'09*.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.　　Applicant's arguments with respect to claims 1-8,10,11 and 14-24 have been considered but are moot in view of the new ground(s) of rejection.

2.　　The allowability of claims 12 and 13 have been withdrawn. New claims 25 and 26 corresponding to claims 12 and 13 are rejected accordingly.

Claim Rejections - 35 USC § 112

3.　　The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.　　**Claims 12,13,18-20,25,26** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

　　　　With regard to claim 12, it is unclear what is the operational connection between the step of "performing NAT on the packet using the entry in the translation table" in lines 21-22 which is within the step of "performing NAT on the packet" in lines 8 and 15-16, and the steps of "identifying one of the plurality of routing tables to route the packet using the information in indicating one of the plurality of routing tables to route the packet; identifying an entry in the identified one of the plurality of routing tables using the IP destination address; and routing the packet using the identified routing table entry" in lines 9-13. That is, how is the NAT using the entry in the translation table differ

from an entry in the identified one of the plurality of routing tables using the IP

destination address, and whether the routing the packet using the identified routing

table entry, also uses the entry in the translation table. Similarly in claim 25.

Claims 13 and 26 are rejected because they are dependent from rejected claims

12 and 25.

With regard to claim 18, it is unclear how updating the plurality of sets of routing

information comprises updating a single routing table. Is the plurality of sets of routing

information all within the one routing table?

Claims 19 and 20 are rejected because they are dependent from rejected claim

18.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 1-8,10,11,14-16,18-24** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Matsuhira (EP 1 298 853) (provided by Applicant) in view of Knee et

al. (US 2002/0143787) and Badran ("Service Provider Networking Infrastructures with

MPLS") (provided by Applicant).

        With regard to claims 1 and 22-24, Matushira discloses

        maintaining a plurality of routing tables **(routing tables 501,502,503 in Fig. 8)**,

each of a plurality of virtual private networks being associated with a different one of the

plurality of routing tables **(See VPN ID 1 and 2 in accommodating function 32 Fig. 8)**

VPNs with IDs 1 and 2 have its own routing table);

        receiving a packet **(routing function 30 in Fig. 8)**, the packet including an IP

source address and an IP destination address **(source address 26 and destination**

address 27 in Fig. 2 or 28 and 29 respectively in Fig. 3), the packet further including

information indicating one of the plurality of routing tables to route the packet **(label**

field in Fig. 5);

        performing Network Address Translation on the packet **(VPN to IP in Fig. 7)**; and

        identifying one of the plurality of routing tables to route the packet using the

information indicating one of the plurality of routing tables to route the packet **(See VPN**

ID 1 and 2 in accommodating function 32 Fig. 8) (VPNs with IDs 1 and 2 have its

own routing table).

However, Matushira fails to explicitly show

        identifying an entry in the identified one of the plurality of routing tables using the

IP destination address;

routing the packet using the identified routing table entry;

receiving a default route to a network device providing one or more shared

services, the default route to the network device providing one or more shared services

being advertised by the network device providing one or more shared services, wherein

each of the shared services is available to each of the plurality of virtual private

networks; and

updating each of the plurality of routing tables to include the default route,

thereby enabling the plurality of virtual private networks to access the shared services

via the default route that is included in each of the plurality of routing tables.

In an analogous art of routing tables, Knee discloses

identifying an entry in the identified one of the plurality of routing tables using the

IP destination address (**"an IP destination address matches … one entry in the**

routing table", para. [0007]); and

routing the packet using the identified routing table entry (**"… forward the**

packet according to the forwarding instructions associated with the entry having

the most 'specific' matching routing table entry ...", para. [0007]).

In an analogous art of tag switching, Badran discloses

receiving a default route (**FIB table**) to a network device providing one or more

shared services, the default route to the network device providing one or more shared

services being advertised (**distribution**) by the network device providing one or more

shared services (**"BGP is a routing information distribution protocol that defines who can talk to whom using multi-protocol extensions and community attributes. VPN membership depends upon logical ports entering the VPN, where BPG assigns a unique RD. RDs are unknown to end users, making it impossible to enter the network on another access port and spoof a flow. Only pre-assigned ports are allowed to participate in the VPN. In an MPLS-enabled VPN, BGP distributes forwarding information base (FIB) tables about VPNs to only members of the same VPN, providing native security via logical VPN traffic separation",** **p.317, Section 3.3**), wherein each of the shared services is available to each of the plurality of virtual private networks (**"Using MPLS, service providers can deliver the IP VPN services that business demand across either switched or routed networks", p.312, Abstract**); and

updating (**updating**) each of the plurality of routing tables to include the default route, thereby enabling the plurality of virtual private networks to access the shared services via the default route that is included in each of the plurality of routing tables (**"BGP maps FIB tables to provider edge LSRs belonging to only a particular VPN, instead of updating all edge LSRs in the provider network", p.316, Section 3.3**).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Knee, with Matushira, for the benefit of address lookup efficiency. Knee, para. [0003]. It would have been obvious to a person of ordinary skill in the art to combine the teaching of Badran, with Matushira and Knee,

to take advantage of MPLS including Traffic Engineering and Quality of Service

mechanisms. Badran, Abstract.

With regard to claim 2, Matsuhira further discloses each of the plurality of virtual

private networks is associated with a different customer **(organization A,B,C, para.**

[0004]) (See VPN ID 1 and 2 in accommodating function 32 Fig. 8).

With regard to claim 3, Matsuhira further discloses the network device is

associated with an ingress interface of a service provider network **(VPN edge router 20**

in Fig. 8).

With regard to claim 4, Matsuhira further discloses the network device is

associated with an egress interface of a service provider network **(VPN edge router 20**

in Fig. 8).

With regard to claim 5, Matsuhira further discloses the network device is

associated with a service provider network **(service providers, para. [0004])**.

With regard to claim 6, Matushira further discloses translating the IP source

address from a private address to a public address when the packet is received from a

network device in a private network **("… in the direction from Intranet to Internet,**

any packet for communication in an Intranet is converted to a packet which can be processed in the Internet.", para. [0006])(*See Also* Fig. 7).

With regard to claim 7, Matsuhira further discloses translating the IP destination address from a public address to a private address when the packet is received from a network device in a public network **("… in the direction from Intranet to Internet, any packet for communication in an Intranet is converted to a packet which can be processed in the Internet.", para. [0006])(*See Also* Fig. 7).**

With regard to claim 8, Matsuhira further discloses the network device in the public network provides one or more services to each of the plurality of virtual private networks **(service providers, para. [0004]).**

With regard to claim 10, the combination of Matushira, Knee and Badran discloses the method as recited in claim 1. Matushira further discloses identifying the one of the plurality of routing tables associated with the ascertained virtual private network **(See VPN ID 1 and 2 in accommodating function 32 Fig. 8).**

Badran further discloses the packet includes an MPLS tag indicating a virtual private network **("Using MPLS, service providers can deliver the IP VPN services that business demand across either switched or routed networks", p.312, Abstract),** and wherein identifying one of the plurality of routing tables comprises:

ascertaining the virtual private network from the MPLS tag **("to enable the delivery of VPN services", p.312, Abstract)**.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Knee, with Matushira, for the benefit of address lookup efficiency. Knee, para. [0003]. It would have been obvious to a person of ordinary skill in the art to combine the teaching of Badran, with Matushira and Knee, to take advantage of MPLS including Traffic Engineering and Quality of Service mechanisms. Badran, Abstract.

With regard to claim 11, the combination of Matushira, Knee and Badran discloses the method as recited in claim 10.

Badran further discloses the MPLS tag further identifies the network device responsible for performing NAT and routing the packet **("MPLS ... Labels indicate both routes and service attributes", p.312, Abstract)**.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Badran, with Matushira and Knee, for the advantages of MPLS including Traffic Engineering and Quality of Service mechanisms. Badran, Abstract.

With regard to claim 14, Matushira discloses

maintaining a plurality of routing tables **(routing tables 501,502,503 in Fig. 8)**, each of a plurality of virtual private networks being associated with a different one of the

plurality of routing tables **(See VPN ID 1 and 2 in accommodating function 32 Fig. 8)**

VPNs with IDs 1 and 2 have its own routing table);

receiving a packet **(routing function 30 in Fig. 8)**, the packet including an IP

source address and an IP destination address **(source address 26 and destination**

address 27 in Fig. 2 or 28 and 29 respectively in Fig. 3), the packet further including

information indicating one of the plurality of routing tables to route the packet **(label**

field in Fig. 5);

performing Network Address Translation on the packet **(VPN to IP in Fig. 7)**; and

identifying one of the plurality of routing tables to route the packet using the

information indicating one of the plurality of routing tables to route the packet **(See VPN**

ID 1 and 2 in accommodating function 32 Fig. 8) (VPNs with IDs 1 and 2 have its

own routing table).

However, Matushira fails to explicitly show

identifying an entry in one of the plurality of routing information using the IP

destination address and the information indicating one of the plurality of sets of routing

information ;

routing the packet using the identified entry;

receiving a default route to a network device providing one or more shared

services, the default route to the network device providing one or more shared services

being advertised by the network device providing one or more shared services, wherein

each of the shared services is available to each of the plurality of virtual private

networks; and

updating each of the plurality of routing information to include the default route,

wherein each of the plurality of sets of routing information corresponding to each of the

plurality of virtual private networks is stored in one or more routing tables, thereby

updating the one or more routing tables associated with the plurality of virtual private

networks to include the default route to the network device providing one or more

shared service available to each of the plurality of virtual private networks, enabling the

plurality of virtual private networks to access the shared services via the default route

that is included in each of the plurality of routing tables.

In an analogous art of routing tables, Knee discloses

identifying an entry in the identified one of the plurality of routing information

using the IP destination address **("an IP destination address matches ... one entry

in the routing table", para. [0007])**; and

routing the packet using the identified routing table entry **("... forward the

packet according to the forwarding instructions associated with the entry having

the most 'specific' matching routing table entry ...", para. [0007])**.

In an analogous art of tag switching, Badran discloses

receiving a default route **(FIB table)** to a network device providing one or more

shared services, the default route to the network device providing one or more shared

services being advertised **(distribution)** by the network device providing one or more

shared services **("BGP is a routing information distribution protocol that defines**

who can talk to whom using multi-protocol extensions and community attributes.

VPN membership depends upon logical ports entering the VPN, where BPG

assigns a unique RD. RDs are unknown to end users, making it impossible to

enter the network on another access port and spoof a flow. Only pre-assigned

ports are allowed to participate in the VPN. In an MPLS-enabled VPN, BGP

distributes forwarding information base (FIB) tables about VPNs to only members

of the same VPN, providing native security via logical VPN traffic separation",

p.317, Section 3.3), wherein each of the shared services is available to each of the

plurality of virtual private networks **("Using MPLS, service providers can deliver the**

IP VPN services that business demand across either switched or routed

networks", p.312, Abstract); and

updating **(updating all edge LSRs)** each of the plurality of routing tables to

include the default route, thereby updating the one or more routing tables associated

with the plurality of virtual private networks **(See VPN ID 1 and 2 in accommodating**

function 32 Fig. 8) (VPNs with IDs 1 and 2 have its own routing table) to include the

default route to the network device providing one or more shared service available to

each of the plurality of virtual private networks, enabling the plurality of virtual private

networks to access the shared services via the default route that is included in each of

the plurality of routing tables **("BGP maps FIB tables to provider edge LSRs**

belonging to only a particular VPN, instead of updating all edge LSRs in the

provider network", p.316, Section 3.3).

At the time of the invention, it would have been obvious to a person of ordinary

skill in the art to combine the teaching of Knee, with Matushira, for the benefit of

address lookup efficiency. Knee, para. [0003]. It would have been obvious to a person

of ordinary skill in the art to combine the teaching of Badran, with Matushira and Knee,

to add security. Badran, p.316, 3.3. MPLS VPN Security.

With regard to claim 15, Matushira further discloses each of the plurality of sets

of routing information corresponding to each of the plurality of virtual private networks is

stored in a separate routing table **(See VPN ID 1 and 2 in accommodating function**

32 Fig. 8) (VPNs with IDs 1 and 2 have its own routing table).

With regard to claim 16, Matushira further discloses each of the plurality of sets

of routing information corresponding to each of the plurality of virtual private networks is

stored in a single routing table **(See VPN ID 1 and 2 in accommodating function 32**

Fig. 8) (VPNs with IDs 1 and 2 have its own routing table), wherein each entry in the

routing table includes a VPN identifier identifying the corresponding one of the plurality

of virtual private networks **(VPN ID 1 and 2)**.

With regard to claim 18, Matushira further discloses updating **(updating)** a single routing table to include default route **("BGP maps FIB tables to provider edge LSRs belonging to only a particular VPN, instead of updating all edge LSRs in the provider network", p.316, Section 3.3)**.

With regard to claim 19, Matushira further discloses the single routing table is dedicated to storing the default route **(FIB)** to shared services available to each of the plurality of virtual private networks **("BGP maps FIB tables to provider edge LSRs belonging to only a particular VPN, instead of updating all edge LSRs in the provider network", p.316, Section 3.3)**.

With regard to claim 20, Matushira further discloses the single routing table stores the plurality of sets of routing information **(a table has more than one entry)**.

With regard to claim 21, Matushira further discloses updating **(updating)** a plurality of sets of routing tables to include the default route **(FIB)**, each of the plurality of routing tables being associated with a different one of the plurality of virtual private networks **(See VPN ID 1 and 2 in accommodating function 32 Fig. 8) (VPNs with IDs 1 and 2 have its own routing table)**.

Conclusion

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-

3177. The examiner can normally be reached on Monday through Friday, 830am to
530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for
the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should
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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a
USPTO Customer Service Representative or access to the automated information
system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Blanche Wong/
Examiner, Art Unit 2419
June 3, 2009
        /Ayaz R. Sheikh/
        Supervisory Patent Examiner, Art Unit 2419